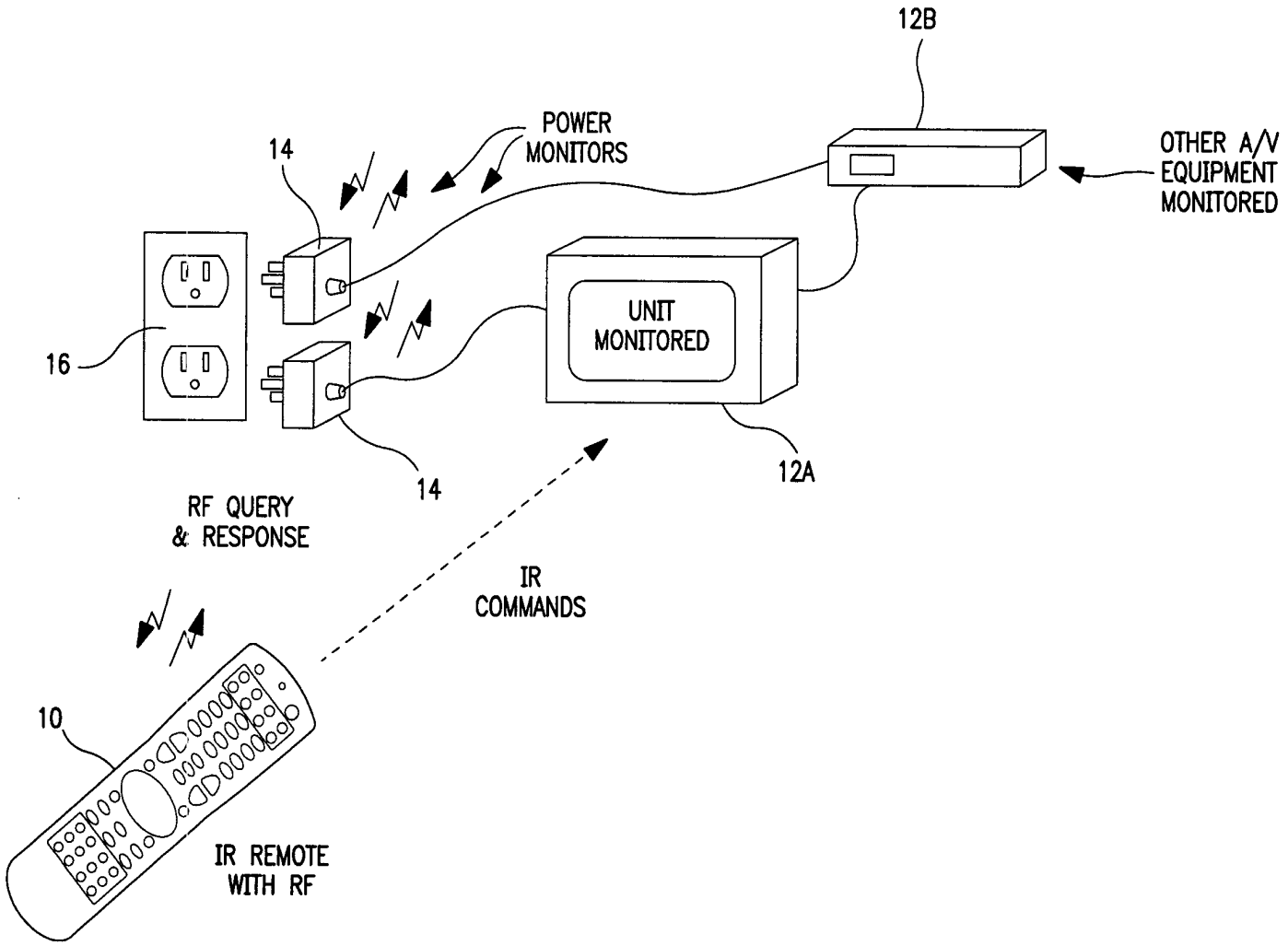
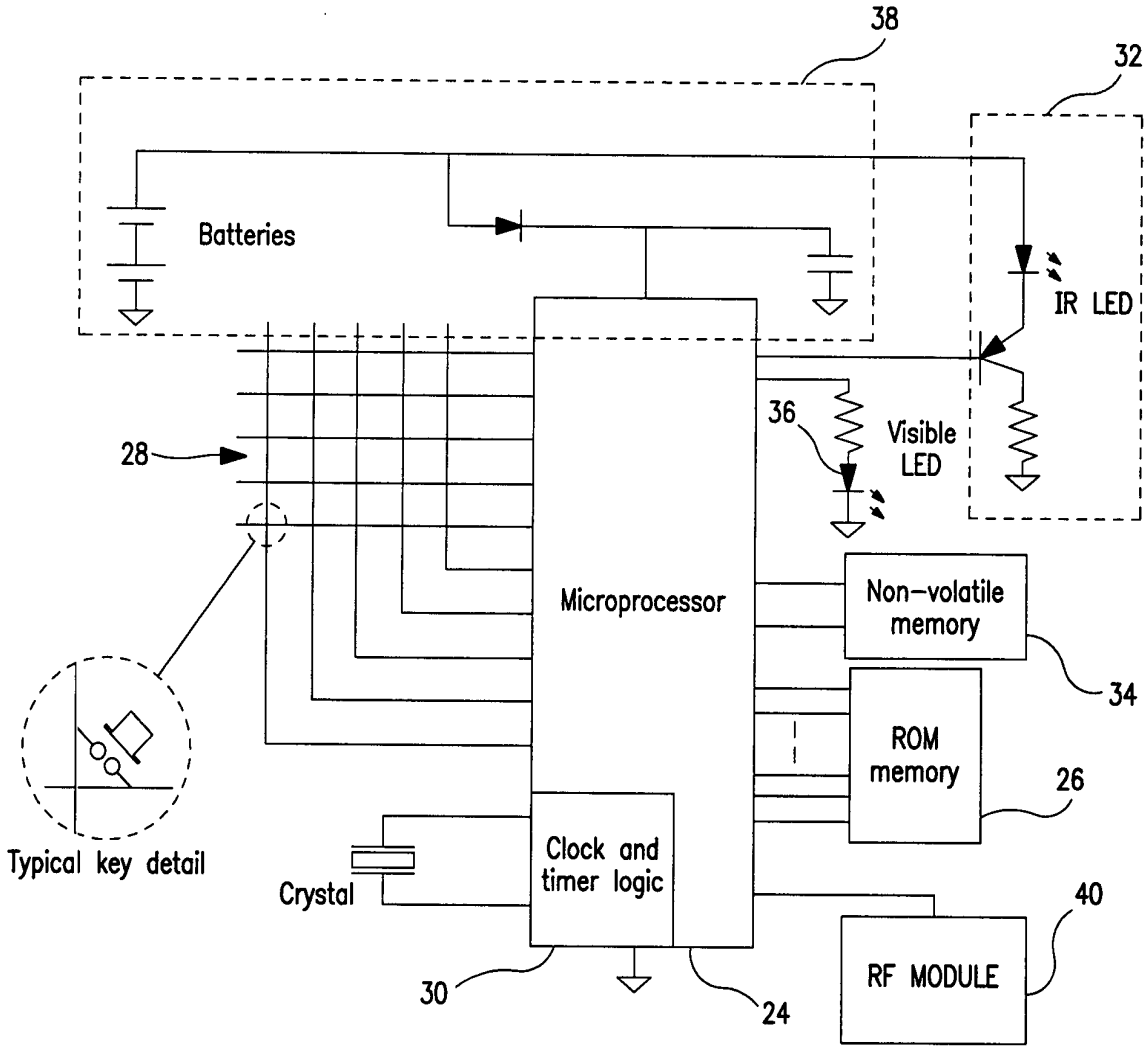

12B
POWER
MONITORS
14
OTHER A/V
EQUIPMENT
MONITORED
UNIT
MONITORED
16
14
12A
RF QUERY
& RESPONSE
IR
COMMANDS
10
IR REMOTE
WITH RF

FIG. 1



REMOTE CONTROL HARDWARE BLOCK DIAGRAM

FIG. 2

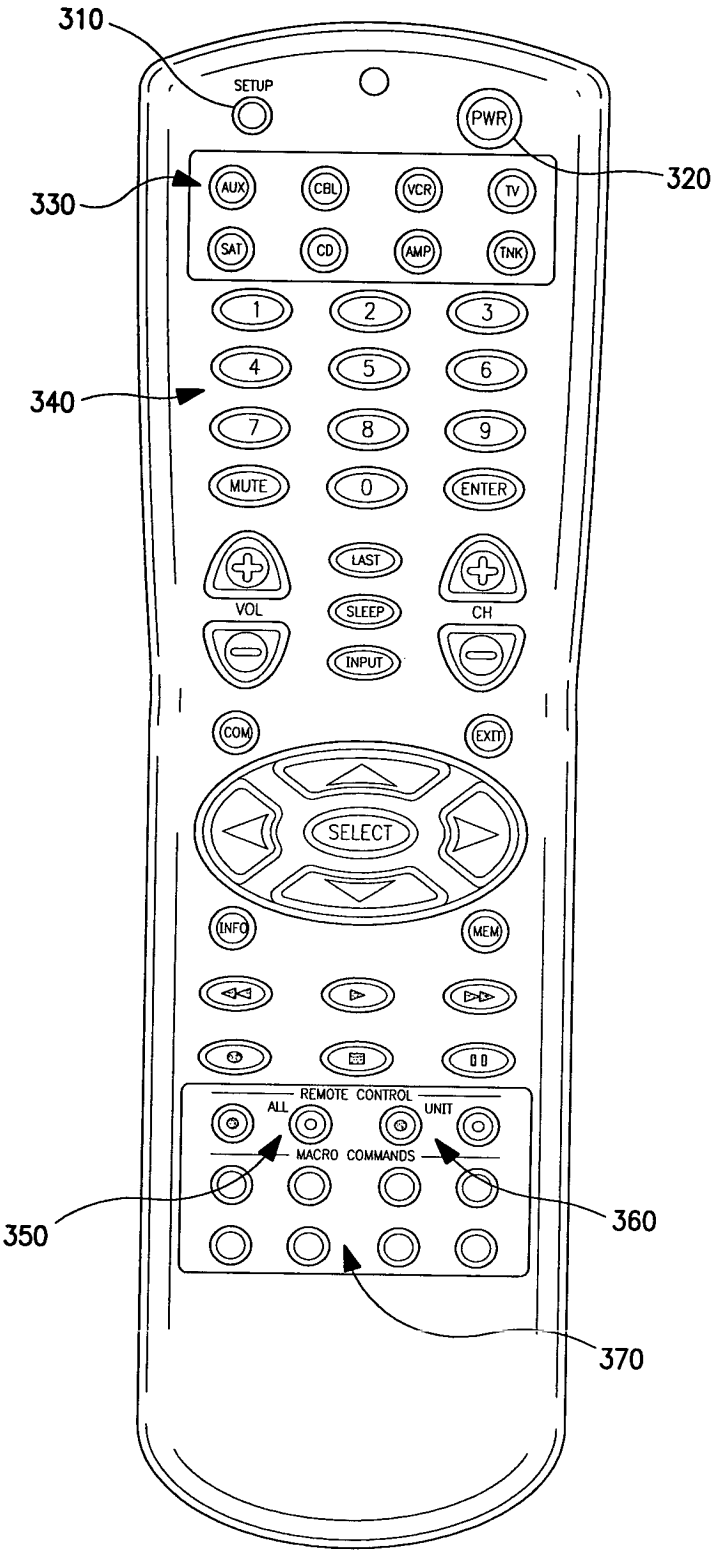
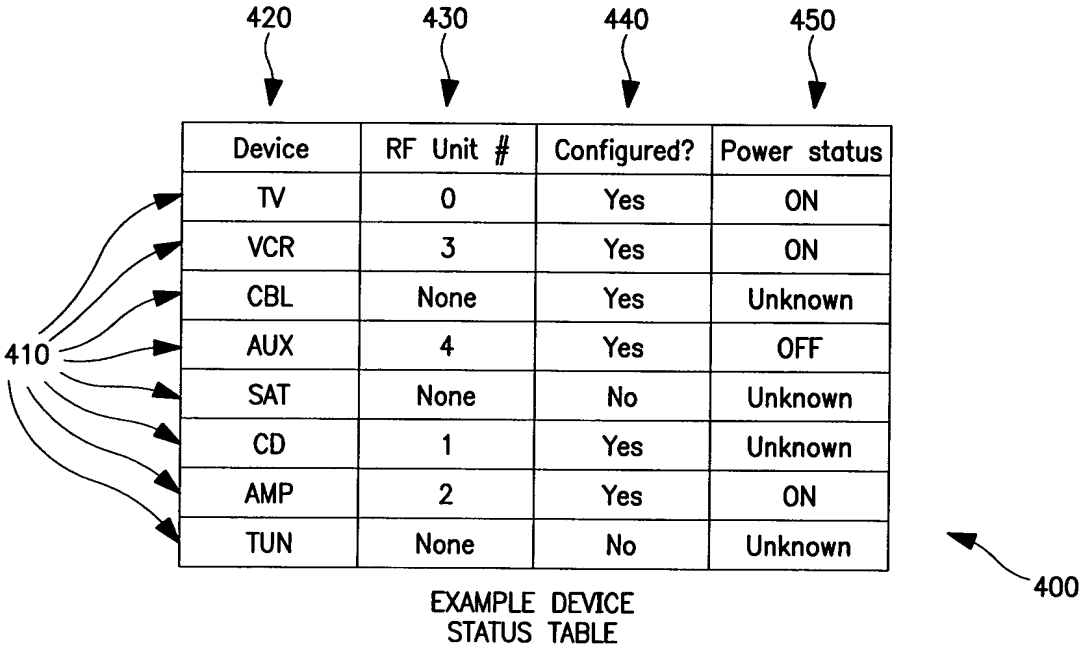

310
SETUP
PWR
320
330
AUX
CBL
VCR
TV
SAT
CD
AMP
TNK
1
2
3
4
5
6
340
7
8
9
MUTE
0
ENTER
LAST
SLEEP
INPUT
VOL
CH
COM
EXIT
SELECT
INFO
MEM
REMOTE CONTROL
ALL
UNIT
MACRO COMMANDS
350
360
370

FIG. 3



Device	RF Unit #	Configured?	Power status
TV	0	Yes	ON
VCR	3	Yes	ON
CBL	None	Yes	Unknown
AUX	4	Yes	OFF
SAT	None	No	Unknown
CD	1	Yes	Unknown
AMP	2	Yes	ON
TUN	None	No	Unknown

EXAMPLE DEVICE STATUS TABLE

FIG. 4

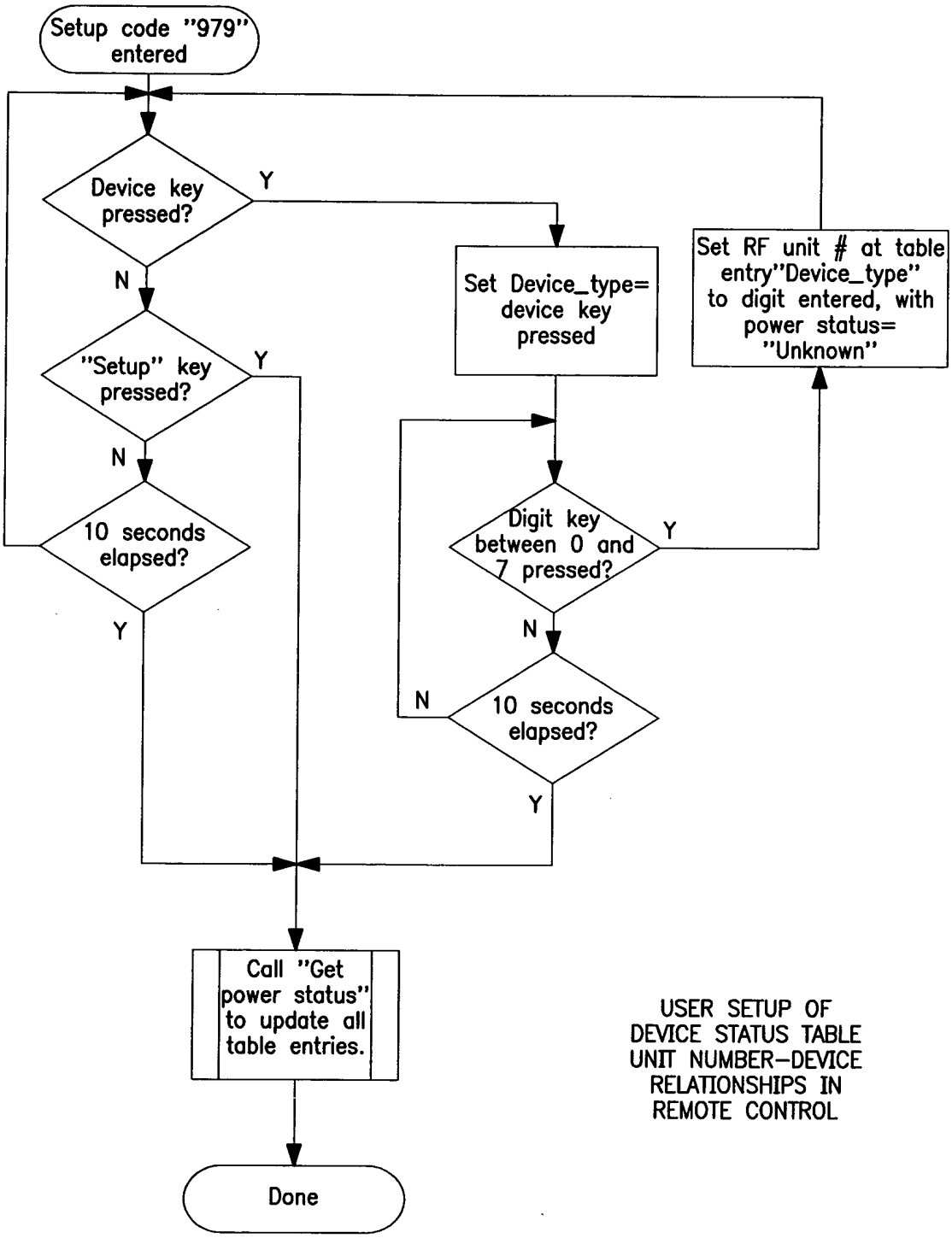
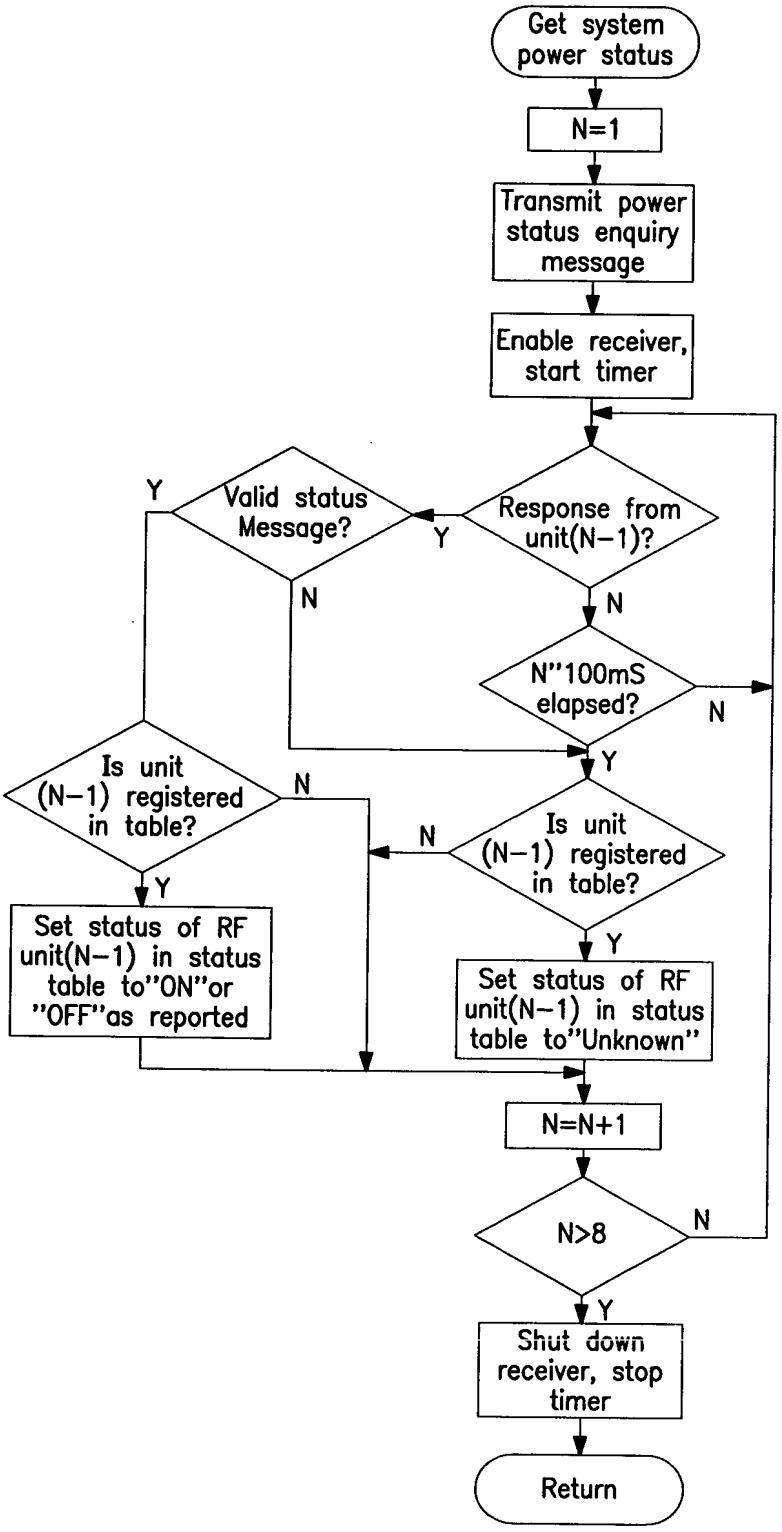
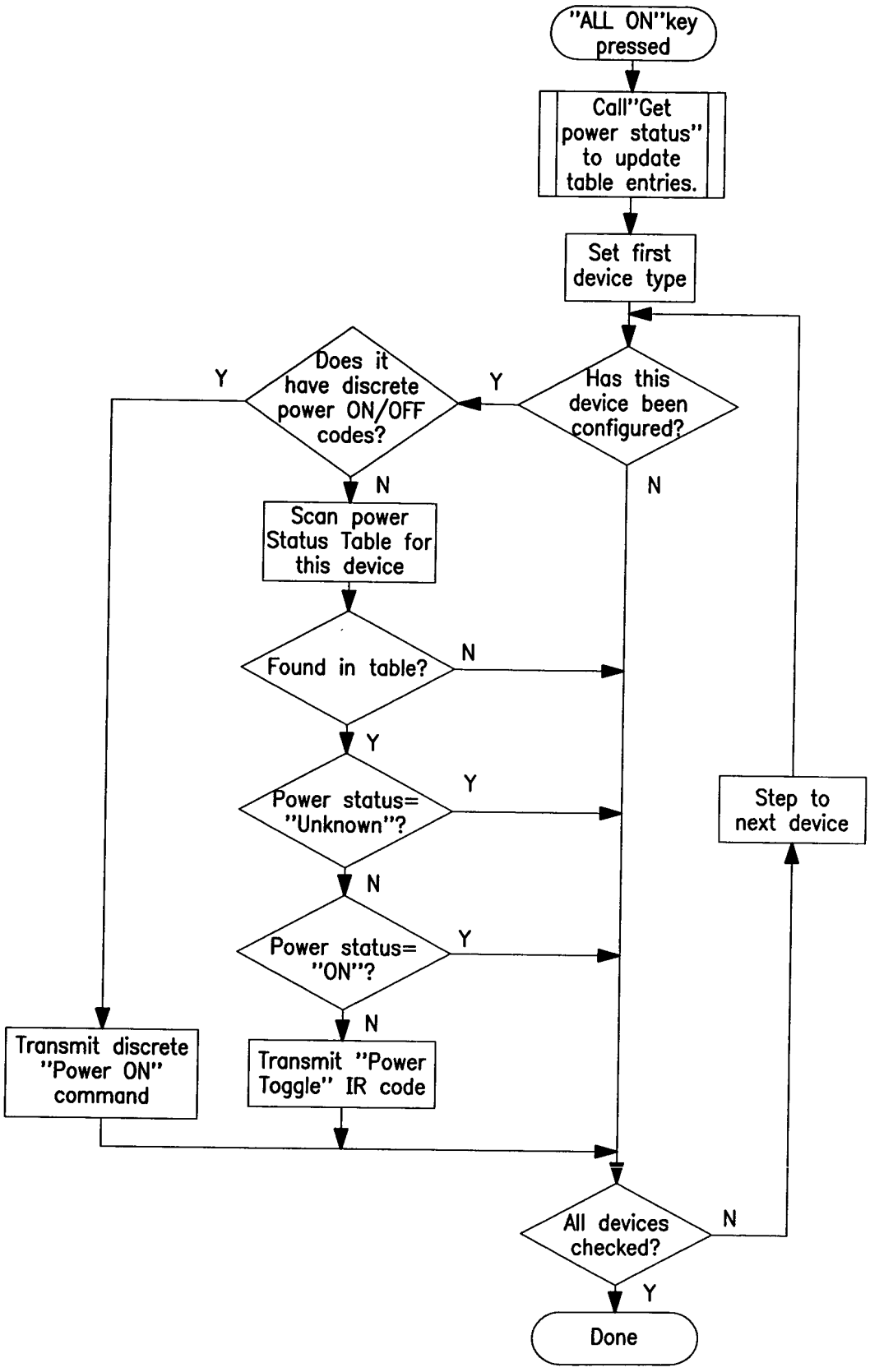

Setup code "979" entered
Device key pressed?
Y
N
"Setup" key pressed?
Y
N
10 seconds elapsed?
Y
Set Device_type= device key pressed
Digit key between 0 and 7 pressed?
Y
N
10 seconds elapsed?
N
Y
Set RF unit # at table entry"Device_type" to digit entered, with power status= "Unknown"
Call "Get power status" to update all table entries.
Done
USER SETUP OF DEVICE STATUS TABLE UNIT NUMBER–DEVICE RELATIONSHIPS IN REMOTE CONTROL

FIG. 5



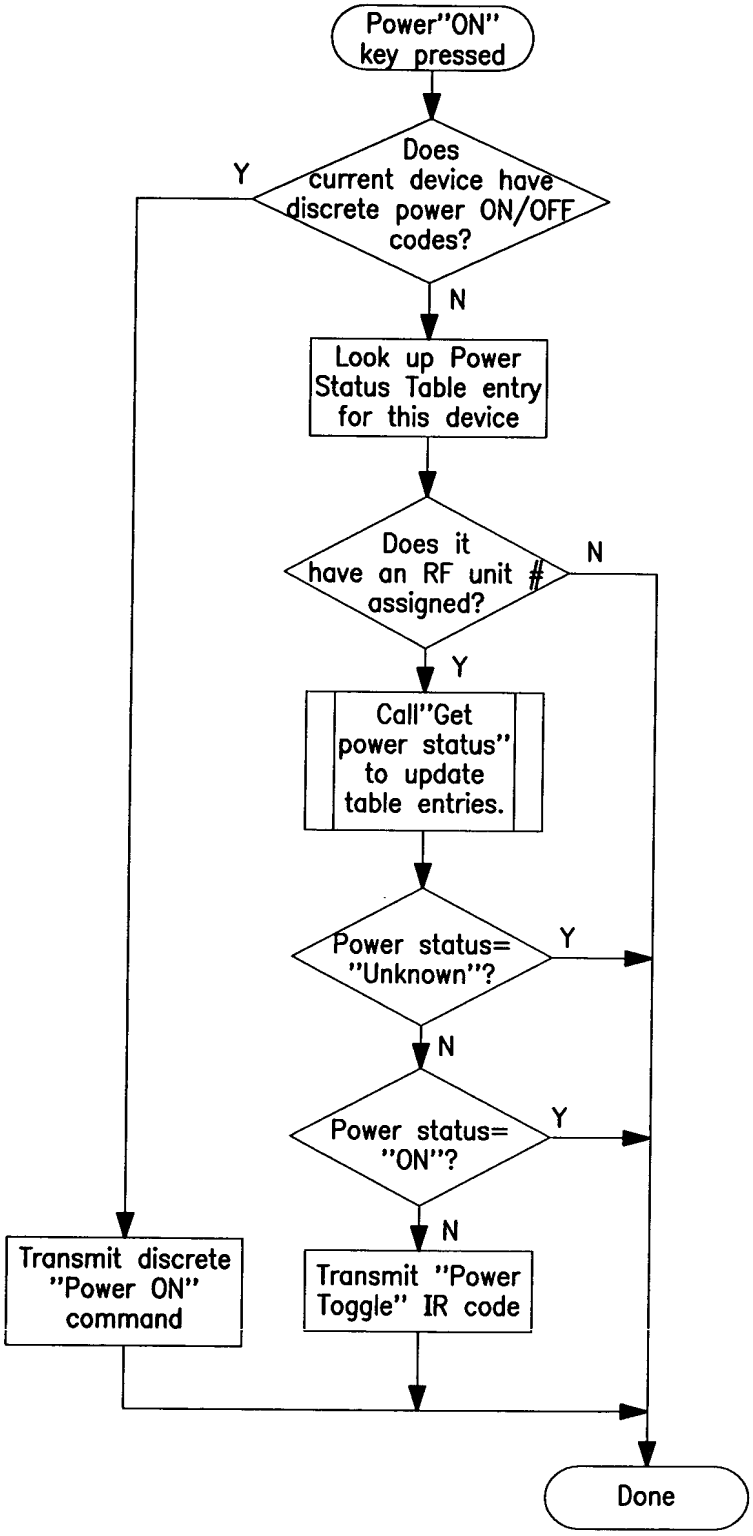
REMOTE CONTROL "GET POWER STATUS" LOGIC FLOW

FIG. 6



REMOTE CONTROL "ALL ON" LOGIC

FIG. 7



REMOTE CONTROL INDIVIDUAL "UNIT ON" LOGIC

FIG. 8

POWER MONITOR SYSTEM DIAGRAM

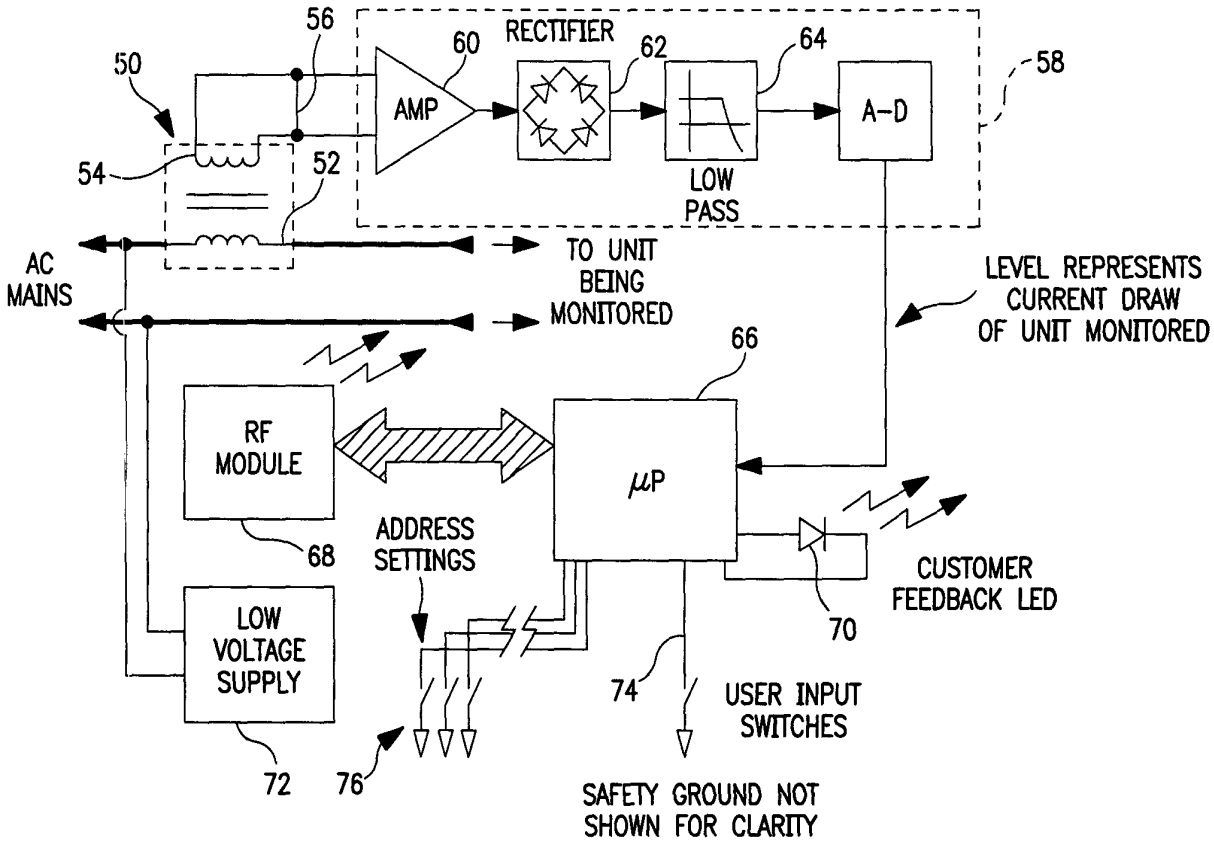


FIG. 9

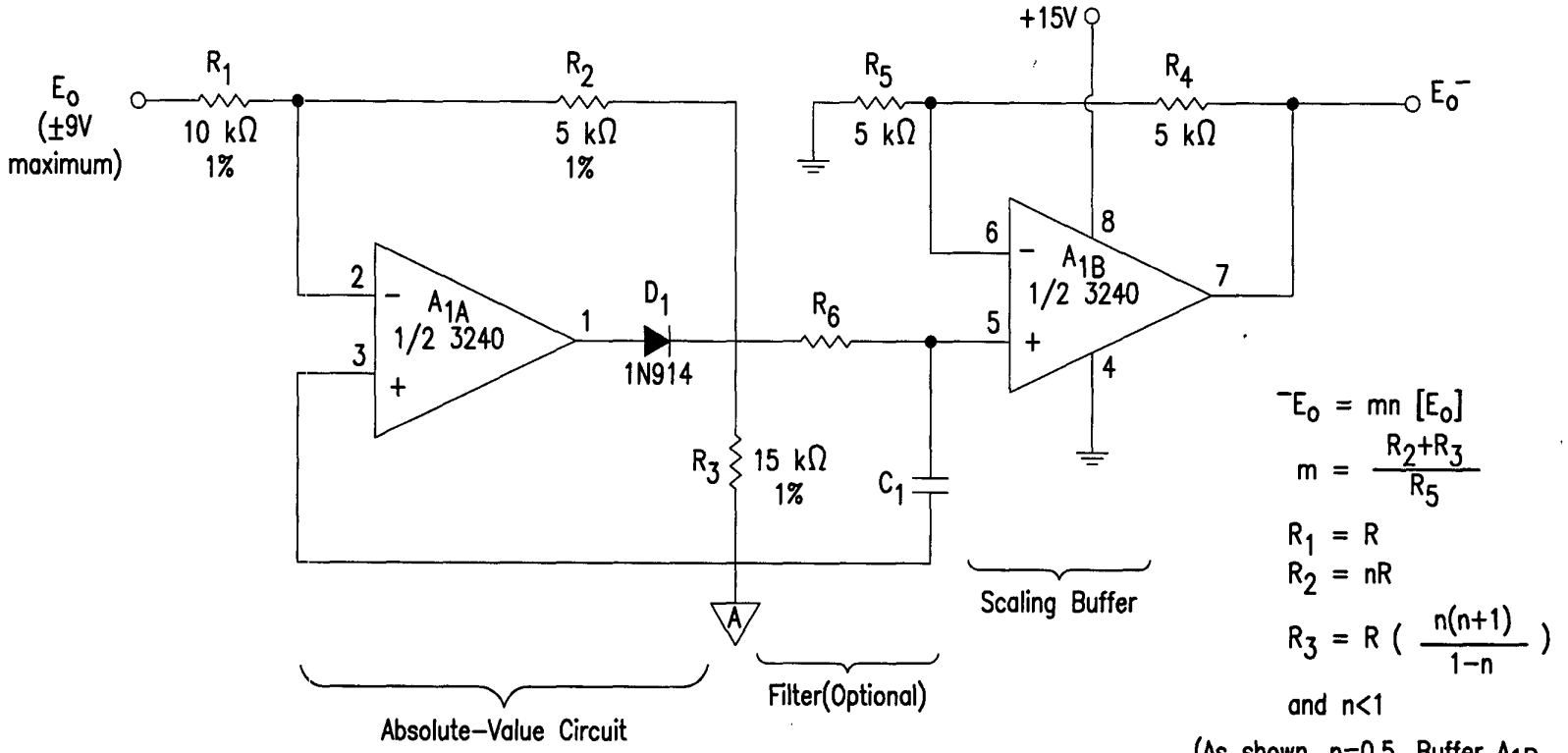
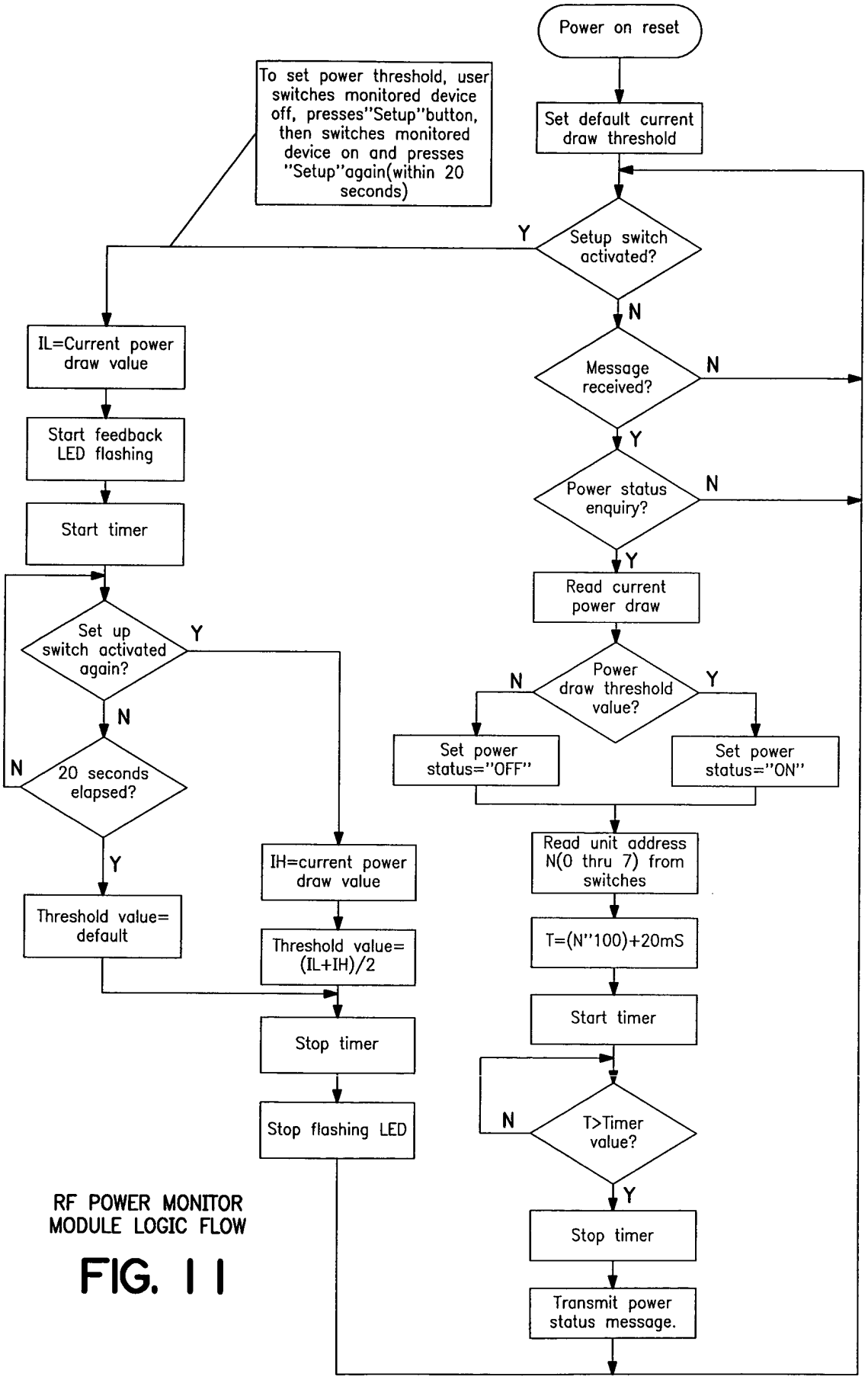

E_o
(±9V
maximum)
R_1
10 kΩ
1%
R_2
5 kΩ
1%
+15V
R_5
5 kΩ
R_4
5 kΩ
E_o^-
A_{1A}
1/2 3240
D_1
1N914
R_6
A_{1B}
1/2 3240
R_3 15 kΩ
1%
C_1
A
Absolute-Value Circuit
Filter(Optional)
Scaling Buffer
$^-E_o = mn\ [E_o]$
$m = \frac{R_2+R_3}{R_5}$
$R_1 = R$
$R_2 = nR$
$R_3 = R\left(\frac{n(n+1)}{1-n}\right)$
and n<1
(As shown, n=0.5. Buffer A_{1B} scales overall gain to unity with m=2.)

FIG. 10



RF POWER MONITOR MODULE LOGIC FLOW

FIG. 11

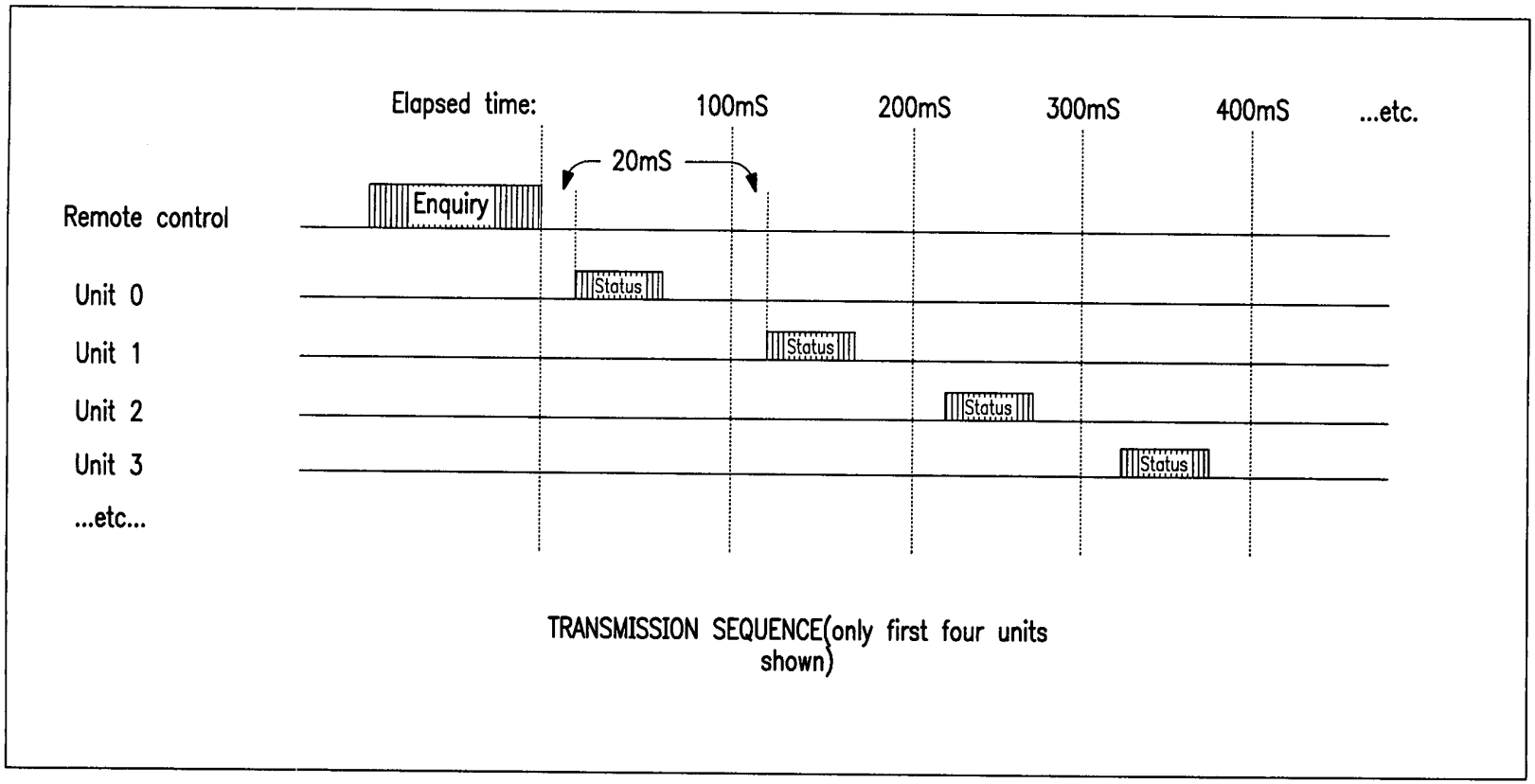

Elapsed time:
100mS
200mS
300mS
400mS
...etc.
20mS
Remote control
Enquiry
Unit 0
Status
Unit 1
Status
Unit 2
Status
Unit 3
Status
...etc...
TRANSMISSION SEQUENCE(only first four units shown)

FIG. 12

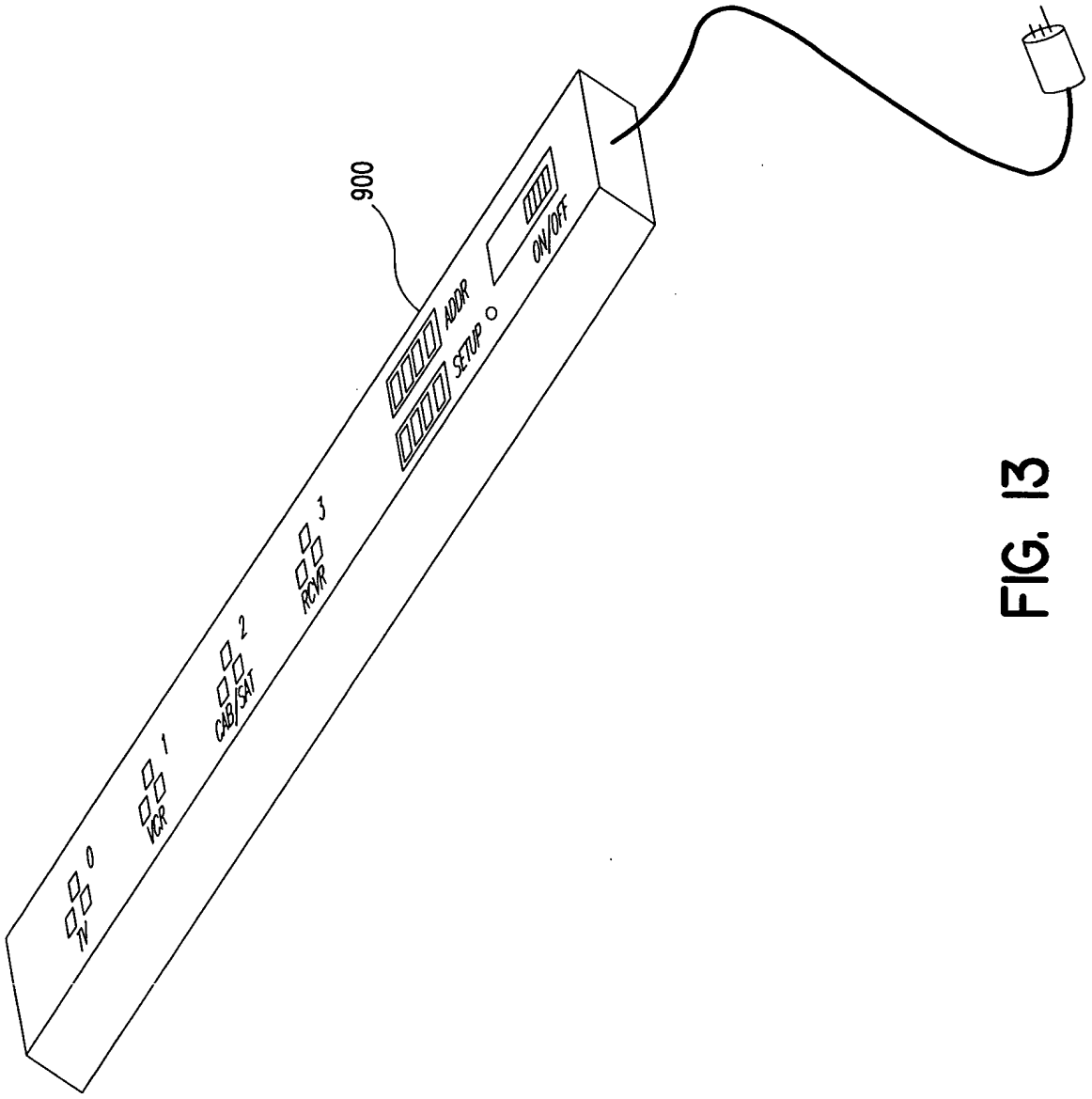


FIG. 13

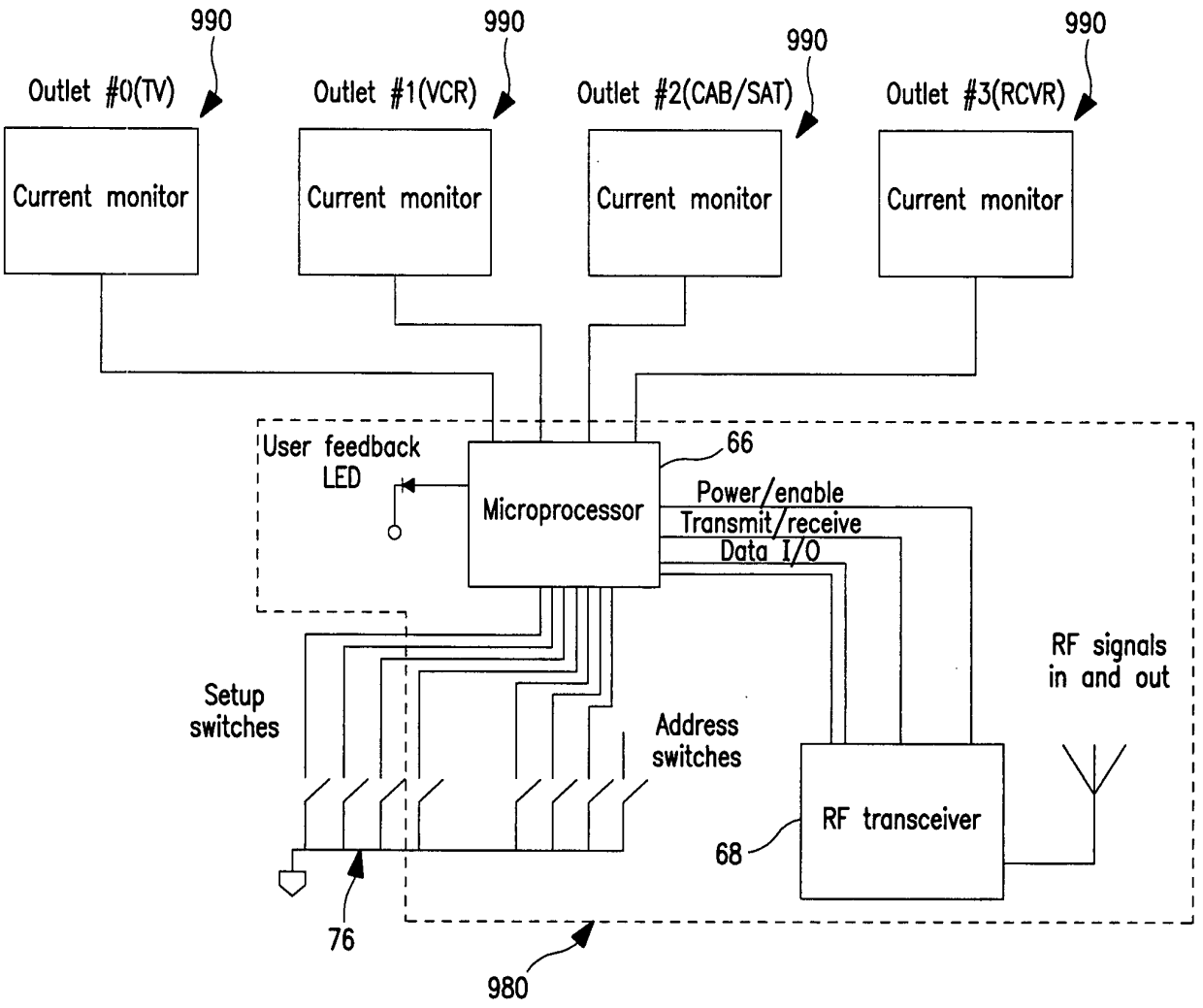

990
990
990
990
Outlet #0(TV)
Outlet #1(VCR)
Outlet #2(CAB/SAT)
Outlet #3(RCVR)
Current monitor
Current monitor
Current monitor
Current monitor
User feedback LED
Microprocessor
66
Power/enable
Transmit/receive
Data I/O
RF signals in and out
Setup switches
Address switches
RF transceiver
68
76
980

FIG. 14